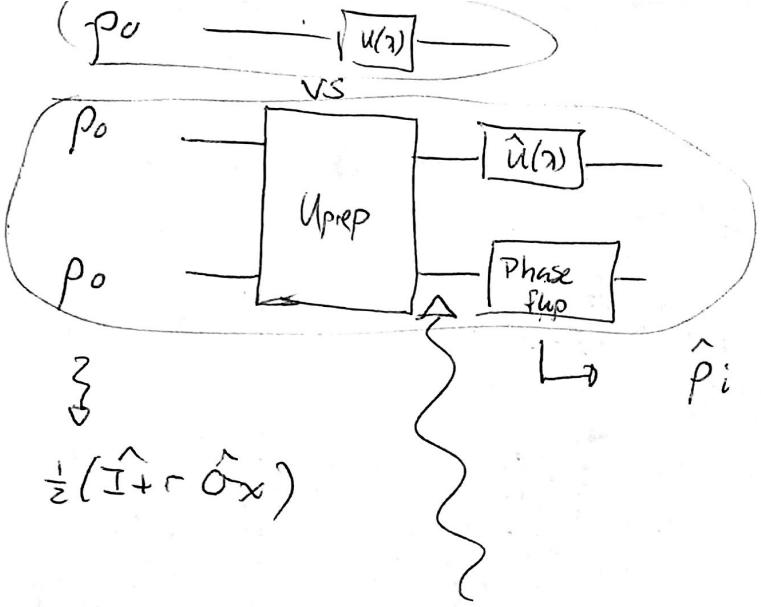

$$\hat{U}(\lambda) = e^{-i\lambda\hat{\sigma}_z/2}$$

$$\hat{\rho}_i \to (1-\alpha)\hat{\rho}_i + \alpha\hat{\sigma}_z\hat{\rho}_i\hat{\sigma}_z$$

(1) Write $\hat{\rho}_{prep} = \ldots |00\rangle\langle 00| + \ldots |00\rangle\langle 01| + \ldots \ldots$

(2) Then determine $\hat{U}(\lambda)$ on $\hat{\rho}_{prep}$

keep in $\hat{\rho}$: $\ldots |00\rangle\langle 00| + \ldots |00\rangle\langle 01| + \ldots$

$= \ldots |0\rangle\langle 0| \otimes |0\rangle\langle 0| + \ldots |0\rangle\langle 0| \otimes |0\rangle\langle 1|$

(3) Then determine phase flip $\hat{\sigma}_z$

and get final density op

(4) QFI

(5) If done with this try instead phase flip with bit-flip

$$\hat{\rho}_i \to (1-\alpha)\hat{\rho}_i + \alpha\hat{\sigma}_x\hat{\rho}_i\hat{\sigma}_x$$

eventually QFI